

Preferred environmental conditions of precipitation systems in and around Bangladesh observed by ground-based radars

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Severe storms tend to occur in Bangladesh. In the pre-monsoon season (March-May) storms with intense rainfall, lightning, hails, and tornadoes are frequently observed. Precipitation systems in the monsoon season (June-September) bring large amount of rainfall and floods tend to occur. The purpose of this study is to elucidate the environmental conditions which cause severe weather. This study analyzed the ground-based radars observed during 2010-2014 with TRMM-based precipitation products and JRA55 reanalysis. The precipitation systems were classified into four types: arc-type (77 cases), line-type (59 cases), scattered-type (178 cases) and broad-type (172 cases) systems. Arc-type systems tended to occur in the pre-monsoon season, and the environmental condition had large vertical shear with dry in the mid troposphere. Line-type systems had no preferred season, and the environmental condition had weak vertical shear. The formation process seemed back building type. The scattered-type systems in the pre-monsoon season occurred in the large vertical shear, whereas that in the monsoon season occurred in the weak vertical shear. Most of the broad-type systems were occurred in the active spells of the intraseasonal variation during the monsoon season, and the scattered-type tended to appear in 1-3 days before the formation of the broad-type systems.

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